



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,589	01/15/2004	Seung-Heon Lee	1279-412/10031297	7988
167	7590	04/28/2005	EXAMINER	
FULBRIGHT AND JAWORSKI L L P			LEE, CALVIN	
PATENT DOCKETING 29TH FLOOR				
865 SOUTH FIGUEROA STREET			ART UNIT	
LOS ANGELES, CA 900172576			PAPER NUMBER	
			2818	

DATE MAILED: 04/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10759,589

Applicant(s)

LEE et al.

Examiner

Lee, Calvin

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005 (Election).
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
4a) Of the above claim(s) 25-36 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-24 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/15/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

OFFICE ACTION

Response to Election

1. The election of claims 1-24, received on March 21, 2005, is acknowledged. Claims 25-36 are withdrawn from further consideration.

Claim Rejections - 35 U.S.C. § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the U.S.

3. Claims 1-3, 5-17, and 19-24 are rejected under 35 U.S.C. 102(b) as anticipated by *Spatz et al* (Langmuir 2000, "Deposition of Inorganic Clusters from Micellar Block Copolymer Film") IDS

a) *Spatz et al* discloses "an ordering of single polystyrene-block-poly(2-vinylpyridine) micelle loaded with tetrachloroauric acid into each regularly-spaced hole of photoresist patterns with an aspect ratio of 0.4-2.7 prepared by e-beam lithography," and its fabrication method for arranging ultra-fine particles into wells, comprising of:

-adding micelles in a solution of toluene hydrophobic liquid [page 409];

-synthesizing nanoparticles within the micelles, using capillary forces of a receding liquid front to self-assemble the nanoparticles into physically the wells, thereby forming the micelles containing gold nanoparticles, which have a diameter of 9nm [Fig. 3 and page 410];

b) In re claim 5, *Spatz et al* suggests "the height of the micelles was 35nm ... the particles size was 8nm in height and about 10nm in the width" [pg. 411].

c) In re claims 6-7, since *Spatz et al* discloses "one gold particle in each block copolymer micelle," the diameter of the micelles in dry condition is 1.0 time the diameter of the wells [Fig. 3]

d) In re claims 12-13, *Spatz et al* discloses that the number of said nanoparticles within said wells is controlled by process parameters comprising at least of micelle concentration.

e) In re claims 22-24, *Spatz et al* also suggests a GaAs surface coated with a photo sensitive chemical resistant to acid [page 415, "chemical transformation of the inorganic compound..."]

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Spatz et al.*
Spatz et al.'s nanoparticles comprise gold but not cobalt.

It would have been obvious to one with ordinary skill in the art to modify the nanoparticles of *Spatz et al.*, and thus arrive at the claimed nanoparticles material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 SUPQ 416.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Spatz et al.* in view of *Misner et al.* (Advanced Materials 2003, "Directed Deposition of Nanoparticles using Diblock Copolymer Templates") in IDS.

Spatz et al. does not disclose forming the wells using UV radiation. *Misner et al.* also reported the self-assembly of nanoparticles using capillary forces into block copolymer templates of perpendicularly oriented cylindrical wells obtained by UV irradiation.

It would have been obvious to one with ordinary skill in the art to modify the wells formation of *Spatz et al.* by utilizing a UV irradiation technique for the purpose of forming wells precisely on today nanometer scales.

Contact Information

7. Any inquiry concerning this communication from the Examiner should be directed to *Calvin Lee* at (571) 272-1896 on Mondays thru Thursdays 6:30-4:30PM. If attempts to reach the examiner by telephone are unsuccessful, Art Unit 2818's Supervisory Patent Examiner *David Nelms* can be reached at (571) 272-1787. The fax phone number for the organization (where this application is assigned to) is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system at <http://pair-direct.uspto.gov>. Should you have questions on access to the PAIR system, contact the Electronic Business Center at (866) 217-9197.

CL

Date: April 20, 2005



David Nelms
Supervisory Patent Examiner
Technology Center 2800